

7. (Amended) The method of Claim 2 further comprising the step of transporting the brake component to a tempering oven during step (e).

8. (Amended) The method of Claim 2, wherein the cooling of the brake component is accomplished by introducing gaseous nitrogen into the cryogenic processing chamber.

REMARKS

Claims 1-24 are pending in the present application. Claims 9-24 are withdrawn from consideration. Claims 1-8 are rejected. Reconsideration is respectfully requested in light of the present amendments and following remarks. The above amendments and following remarks are believed to be fully responsive to the Outstanding Office Action and to render all claims at issue patentably distinct over the cited reference.

The Examiner has stated that restriction to one of Inventions I and II is required under 35 U.S.C. § 121. Applicant hereby elects to prosecute the claims directed to Invention I, namely, claims 1-8, with traverse.

Claim Rejections - 35 USC § 112

The Examiner has objected to the specification under 37 C.F.R. § 1.71 because the specification fails to provide an adequate written description of the invention. The Examiner contends that use of the word "approximately" throughout the specification fails to provide a standard for measuring the degree

of closeness or proximity of the wording “approximately.” The Examiner has thus rejected Claims 1-8 under 35 U.S.C. § 112, first paragraph.

This rejection is respectfully traversed. Applicant contends that one skilled in the art of deep cryogenic processing is familiar with inherent variation in manufacturing processes and thus would recognize the term “approximately” and a degree of closeness or proximity. Therefore, one skilled in the art would recognize in the disclosure a description of the invention defined by the claims.

Nevertheless, MPEP § 2163.04 states in relevant part:

“The inquiry into whether the description requirement is met must be determined on a case-by-case basis and is a question of fact. *In re Wertheim*, 541 F.2d 257, 262, 191 USPQ 90, 96 (CCPA 1976). A description as filed is presumed to be adequate, unless or until sufficient evidence or reasoning to the contrary has been presented by the examiner to rebut the presumption. See, e.g., *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971). The examiner, therefore, must have a reasonable basis to challenge the adequacy of the written description. The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims. *Wertheim*, 541 F.2d at 263, 191 USPQ at 97.”

Accordingly, the Examiner has not presented any evidence as to why a person skilled in the art would not recognize in the disclosure a description of the invention defined by the claims. Thus, the present rejection should be withdrawn.

Claim Rejections - 35 USC § 103

The Examiner has stated that the application currently names joint inventors and that Applicant is obligated under 37 C.F.R. § 1.56 to point out the

inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. § 103. However, the Examiner is mistaken since the present application does not currently name joint inventors. Only one inventor is named in the present application, Robert Woolley Brunson.

The Examiner has rejected Claims 1-8 under 35 U.S.C. § 103 as being patentable over U.S. Patent No. 5,447,035 to Workman et al. The Examiner has stated that Workman discloses the claimed cryogenic method steps of treating brake components and that the difference between Workman et al. and the claims 2-3 are that Workman et al. does not disclose repeatedly heating to 300°F and cooling to room temperature. The Examiner has further stated that a two step combination and two obvious process steps is unpatentable when each lends properties to the final product known to be produced when the step is practiced alone. This rejection is respectfully traversed. Applicant contends that the amended claims are patentably distinct over Workman et al. for the reasons as set forth below.

Workman et al. discloses a method of treating vehicular brake pads with a single heat cycle, not more than one heat cycle. Workman et al. does not teach or disclose more than one heat cycle and thus it would not be obvious to provide a second and third post temper as provided by the present invention. Absent such a teaching or suggestion in Workman et al., the claims of the present invention cannot be obvious. Accordingly, it is respectfully requested

that the instant rejections be withdrawn. Claims 4-8 depend from Claims 2 and 3 and are patentably distinct for the reasons set forth above.

In view of the present amendments and remarks, Applicant submits that the present application is in condition for allowance. Therefore, Applicant respectfully requests that the Examiner pass the case to issue at his earliest convenience.

Respectfully submitted,

By: Kelly K. Burris

Kelly K. Burris
Reg. No. 46,361

HARNESS, DICKEY & PIERCE, P.L.C.
7700 Bonhomme Rd.
Suite 400
St. Louis, MO 63105
(314) 726-7500

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Attachment for Specification Amendments

The following is a marked up version of each replacement paragraph, in which underlines indicate insertions and brackets indicate deletions.

Page 17:

A deep cryogenic tempering process for brake components such as rotors and drums is provided, wherein the unique processing profile is dependent on properties of the specific brake components. [The dependent properties include material, mass, and geometrical cross-section, among others, and as a result, application of the deep cryogenic tempering process to brake components results in significant improvements in performance and service life. In another preferred form, the present invention provides a brake component having an improved molecular structure as a result of undergoing deep cryogenic tempering, which results in improved structural properties such as improved warpage resistance and heat resistance, and reduced heat checking, fading, and cracking.] The process comprises the steps of placing a brake component at a temperature within a cryogenic processing chamber, cooling the brake component at a descent rate until the brake component temperature is approximately –300° F, maintaining the brake component temperature at –300° F for a stay time, raising the temperature of the brake component to approximately 300° F at an ascent rate, maintaining the temperature of the brake component at 300° F for a post temper time, and lowering the temperature of the brake component to room temperature at a cool down rate.

Attachment for Claim Amendments

The following is a marked up version of each amended claim in which underlines indicate insertions and brackets indicate deletions.

2. (Amended) [The method of Claim 1, wherein steps (e), (f), and (g) are repeated at least once.] A method for deep cryogenic tempering of brake components, the method comprising the steps of:

(a) placing a brake component at a temperature within a cryogenic processing chamber;

(b) cooling the brake component at a descent rate until the brake component temperature is approximately -300° F;

(c) maintaining the brake component temperature at -300° F for a stay time;

(d) raising the temperature of the brake component to approximately 300° F at an ascent rate;

(e) maintaining the temperature of the brake component at 300° F for a post temper time;

(f) lowering the temperature of the brake component to room temperature at a cool down rate;

(g) raising the temperature of the brake component to approximately 300° F at an ascent rate;

(h) maintaining the temperature of the brake component at 300° F for a post temper time; and

(i) lowering the temperature of the brake component to room temperature at a cool down rate.

3. (Amended) The method of Claim [1] 2, wherein steps [(e), (f), and] (g), (h), and (i) are repeated [twice] for a [second post temper time and a] third post temper time.

5. (Amended) The method of Claim 2 further comprising the step of:

raising the temperature of the brake component to approximately -100° F within the cryogenic processing chamber after step [(d)] (c) and before step [(e)] (d).

7. (Amended) The method of Claim [1] 2 further comprising the step of transporting the brake component to a tempering oven during step (e).

8. (Amended) The method of Claim [1] 2, wherein the cooling of the brake component is accomplished by introducing gaseous nitrogen into the cryogenic processing chamber.